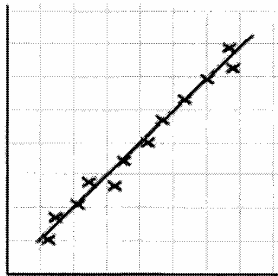


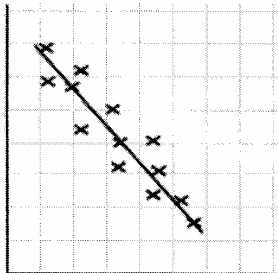
## Lines of best fit

The Line of Best Fit is a line that goes roughly through the middle of all the scatter points on a graph.

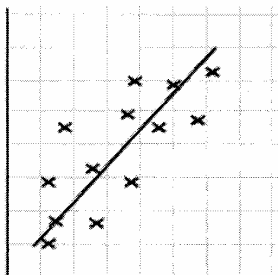
Look at the diagrams below:



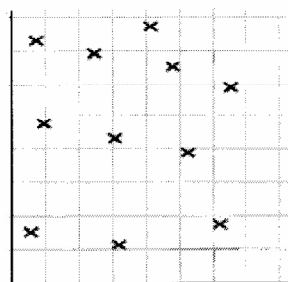
Strong positive correlation



Moderate negative correlation



Weak positive correlation



No correlation

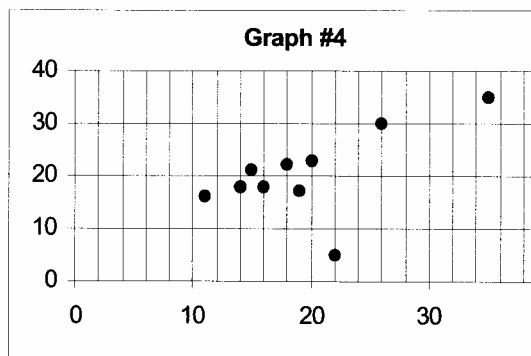
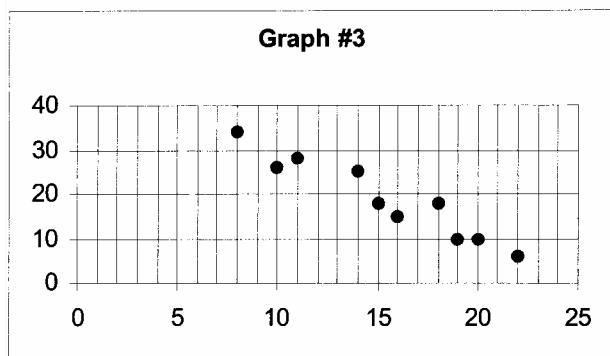
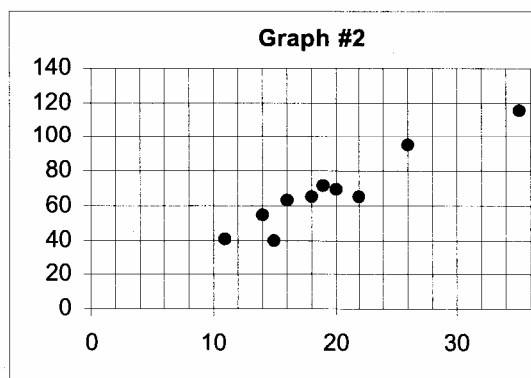
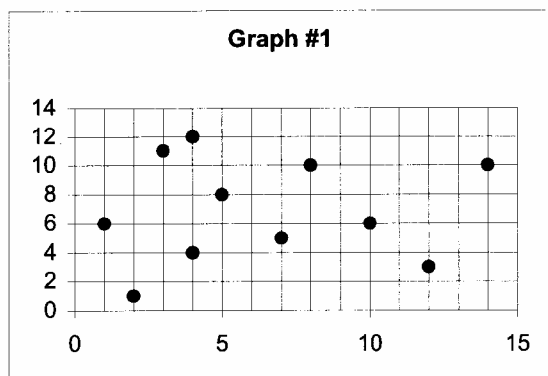
The **line of best fit** is drawn so that the points are evenly distributed on either side of the line. There are various methods for drawing this 'precisely', but you will only be expected to draw the line 'by eye'.

You may be asked to comment on the nature of the correlation. This means that you will be expected to say whether there is positive, negative or no correlation. Using terms such as 'strong', 'moderate' or 'weak' will give a clearer indication of the strength of the connection.

When drawing the line of best fit, use a transparent ruler so you can see how the line fits between all the points before you draw it.

## Is There an Association?

1. Determine which of the following graphs have a positive or negative association or no association.



2. On the graphs that appear to have a relationship, draw the line that best fits the data. Compare your answer with your partner.
3. Which data set appears to have the strongest association? Use mathematics to justify your answer.
4. Which data set appears to have an outlier? Use mathematics to justify your answer.

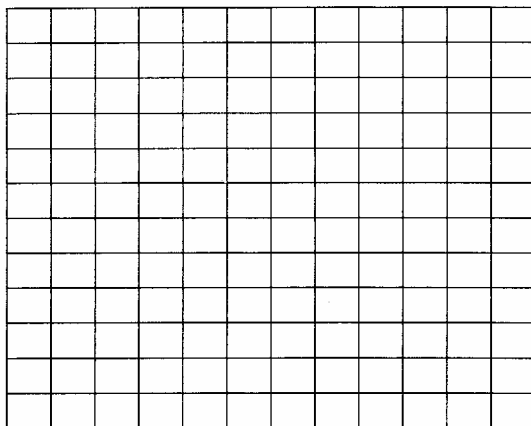
## Waste Not Want Not

Below is a list of waste (trash) generated in the United States from 1970 to 1995 as well as the amount of waste recycled.

Waste generated and recycled

Year	Waste Generated (millions of tons)	Waste Recycled (millions of tons)
1970	122	9
1980	152	15
1985	164	16
1990	197	34
1991	197	38
1992	202	41
1993	205	45
1994	210	52
1995	208	56

- Using the data from the table, make a scatter plot on the graph below using the x-axis for waste generated and the y-axis for waste recycled.



- Find an equation for a line of best fit and draw it on the scatter plot.
- Predict the amount of waste recycled for 250 million tons of waste generated. Use mathematics to explain how you determined your answer. Use words, symbols, or both in your explanation.
- Estimate the amount of waste generated for 50 million tons of waste recycled. Use mathematics to explain how you determined your answer. Use words, symbols, or both in your explanation.